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ABSTRACT

This project studied the use of still picture telephones by four Swedish adults (ages 25-45) with profound mental retardation and additional severe disabilities. After 5 to 6 months of subjects employing still picture telephones on a regular basis in their daily lives, relatives, staff from group homes, and other caregivers completed questionnaires on the devices' use and benefits for users. Results relate factors in the use of still picture telephones to personal/individual factors, communication, social networks, and systemic/infrastructural factors. The use of still picture telephones was found to make the content of communication clearer, increase the frequency of telephone use, promote later conversation, and allow for storage and retrieval of images used. Staff and family attitudes toward the process were found to be key factors in the establishment of still picture phones as part of daily life, and individual attention toward participants also contributed significantly. (Contains 16 references.) (PB)

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Still Picture Telephones

for Persons with Profound Mental Retardation

April 1993

Swedish Telecom

STILL PICTURE TELEPHONES FOR PERSONS WITH PROFOUND MENTAL RETARDATION

A report by

Jane Brodin and Eva Björck-Åkesson

Translated by Ingegerd Alemdar

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Abstract:
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The aim of this project has been to study if people with profound mental retardation can benefit from still picture telephones in their daily lives. Concrete questions have been if transmission of pictures via the telenet facilitates communication for people with profound mental retardation and if a still picture telephone contributes to social contacts and improves the quality of life.

In the report data from four persons, two men and two women between 25 and 45 years of age, are stated. They have profound mental retardation and several severe additional disabilities. Different questionnaires in combination with observations and interviews have been used. The questions have been answered by relatives, staff from group homes and from day centers. The empirical study has been conducted during a period of five to six months.

The results show that questions related to the use of still picture telephones are to be referred to personal/individual factors, communication, the social network and organization/system. In the report a general picture of the four participants and their environments is given. The importance of the opinions and attitudes to the use of still picture telephones for people with profound mental retardation is stressed.

Keywords: still picture telephony, picture telephony, videotelephony, profound mental retardation, communication, telecommunication, disability

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FOREWORD

There are many prejudices or preconceived opinions regarding technology and functional impairment. One opinion is that technology used for rehabilitation should be limited to equipments like wheel-chairs, prothesis and hearing-aids. It is not always evident that an ordinary telephone, for instance, can be an important aid for a disabled person. Another opinion is that means of assistance should be simple to be suitable, in other words not based on advanced electronics or any other so called High Tech.

This is especially the case when it comes to aid for persons with mental retardation. These people are not expected to be able to benefit from the advanced solutions of information technology.

The ambition should always be to make technology easily accessible, in other words ergonomically and functionally well adapted. Naturally, one must consider the users ability to benefit from technology, whether the user is a child, a person with mental retardation, a well-educated technician or a senile dement aged person. It is equally important to be open to problems and possibilities and to dare to make an effort without having preconceived opinions.

Jane Brodin, Ph.D., and Eva Björck-Åkesson, Ph.D., have taken up the challange to allow a few profoundly mentally retarded adults to try to make use of a commercially available, high tech. communication equipment. This has been done to enable them to take part in the benefits and satisfaction of telephoning. The result certainly does not support the belief that mental retardation and High Tech don't go together. On the contrary, despite both High Tech and, unfortunately, not very good ergonomics, the still picture telephones became the necessary support for these people as a complement to the ordinary telephone. This was just what everybody had hoped for - that the inability to make use of the ordinary telephone should be abolished by the still picture telephone, which by this might be a combined communication and rehabilitation aid.

The Swedish Telecom has financed the project and responsible for planning, realization and conclusion of the study have been Jane Brodin and Eva Björck-Åkesson.

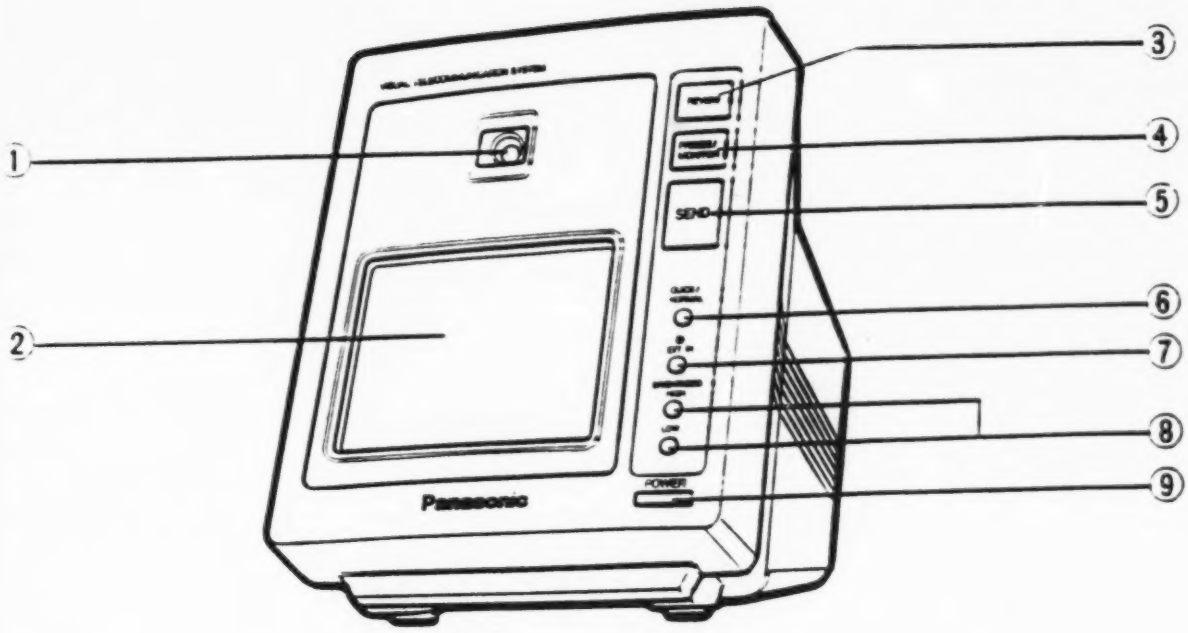
Jan-Invar Lindström
Area manager
Telematics and Disability

INTRODUCTION

The development of new technology is progressing faster and faster and to keep informed about the latest developments in this field can be difficult. Some people are afraid of new technology and are of the opinion that it can restrain the cognitive and the intellectual development and make it difficult for people with disability rather than compensate, alleviate and support an impaired function. Other people have a more optimistic view on new technology and see no reason for concern, but see opportunities for people with functional impairment to take part in social life. Both parties are right. Technology can both restrain and compensate development. However, to be able to compensate and support, the technology must be adapted to the person who is going to use it. If technological aids are developed, but not adjusted to people with functional impairments, it can in reality become an obstacle for them in their daily life. On the other hand, if technology is adapted to the user it can be an aid, which compensates an impairment and makes it possible to participate in social life. Often it is not a matter of difficulty to adjust the equipment itself, but rather lack of ideas and knowledge about the special demands that different types of disabilities involve as well as individual needs. The prime factor today, is possibly the adaptation itself of the new advanced equipment to enable the use of new technology. However, one condition for the new technology to be used functionally, is that it supplies a real demand. This is particularly important concerning people with mental retardation.

During 1990/1991 a project to evaluate the use of still picture telephones for people with moderate mental retardation was carried out (Brodin & Björck-Åkesson, 1991). Today both still pictures and moving pictures can be transmitted over the telephone network. A few still picture telephones of different types, are available on the Swedish market. A still picture telephone consists of a camera for still pictures and a monitor. The user can transmit and receive "frozen" pictures of himself, a photograph or another picture for instance. The transmission of pictures via the telephone network takes approximately ten seconds.The Panasonic still picture telephone WG-R2 (se picture overleaf) allows for storing of the six pictures transmitted last, which can then be shown on the monitor. It is an advantage for people with mental retardation to be able to look at the transmitted pictures after the call has finished.

Those who use symbols such as Bliss or Pictogram for communication, can transmit them over the telephone network with help of still picture telephone. An additional loud-speaking telephone, e.g. Bizz 500 as well as an automatic dialler "The Giant Button" can be connected to the still picture telephone.



1. Camera
2. Monitor
3. Repetition of stored pictures
4. Freez button
5. Send button
6. Fast/normal
7. Out/in
8. Light/dark
9. On/off

Figure No.1. Panasonic Still Picture telephone WG-R2

Earlier studies within the field of telecommunication have been directed towards the deaf and hard of hearing, visually impaired and elderly people (Andersson, 1988; Levin, 1989; Delvert, 1989). The purpose of these studies have been to facilitate telephoning and to emphasize the possibility to communicate (e.g. von Tetzchner, Hesselberg & Langeland, 1991; Perälä & Lounela, 1991). The project on still picture telephony for moderately mentally retarded was the first in Sweden dealing with telecommunication for people with mental retardation. Three children and five adults participated in the project. Two other mentally retarded people, who were friends of the project participants, also took part. They only participated as conversation partners and no data on them was collected. In addition to, that the project participants at the day center had a new interesting activity, both parents and staff had a positive view on the tasks. The results show that six out of the eight participants had great benefit and pleasure by using the still picture telephones. The still picture telephone added a new dimension to life and a possibility to contact those around them. In this respect one can establish that their social network increased resulting in a better quality of life. The still picture telephone contributed to encourage and support communication as well as to maintain social contacts with parents and friends. Something, which is

normally experienced as difficult. Some of the adults were gradually able to use the still picture telephone more functionally and during the project they became more independent.

The participants of the study were moderately mentally retarded. On several occasions during the project the question arose: What would the results be if people with profound mental retardation were able to use still picture telephones? One conclusion, with regard to the participants with moderate mental retardation, was that the combination of auditive and visual information made telephoning easier. The question was, whether people with profound mental retardation would benefit from the still picture telephone in the same way. Already before the start of the project we could predict that training the profoundly mentally retarded would take longer time than with the moderately retarded people. We also realized that the participants would not be able to accomplish the telephoning independently, but they would need support from others in order to use the still picture telephone. We could also predict that the participants physical as well as their emotional state, (health) their "daily form" would strongly affect the use of the still picture telephones (Brodin, 1992b). Obviously, these factors would to a high degree affect the length of the project.

The project to study communication with still picture telephones for the four people with profound mental retardation started in the autumn of 1991. The research carried on for one year and assembling of data for the study took five to six months.

In this report we will neither describe what mental retardation implies nor the different theories on communication, but refer to earlier reports published in this field (Björck-Åkesson, 1992; Brodin, 1991, 1992a; Brodin & Björck-Åkesson, 1990; Brodin & Magnusson, 1992; Kraat, 1985, Light, 1989; Luftig, 1982). This report is based primarily on results of the empirical study.

Purpose

The purpose of the project was to study if people with profound mental retardation can benefit from still picture telephones in their daily lives. The concrete questions were:

* Can transmission of pictures via the telephone network facilitate and support communication for people with profound mental retardation?

* Can the still picture telephone contribute to social contacts and by this improve the quality of life for the individual?

An additional question was if the still picture telephone, on basis of the above mentioned, could be regarded as a communication aid for profoundly mentally retarded people, even if they are unable to use the telephone independently and in a traditional manner. Their lack of language and the fact that they themselves would not be able to learn how to use the equipment for adequate telecommunication, could be an obstacle for functional use. However, there are other aspects to the actual telephoning, for instance emotional and social aspects, which should motivate the use of the still picture telephone to support communication for people with profound mental retardation.

Method

The study is based on earlier studies (Brodin & Björck-Åkesson, 1991; Brodin & Magnusson, 1992) and can be considered as a continuation and deepening within the area of still picture telephony for people with mental retardation. Four people with profound mental retardation are included in the study. Two of the participants are men and two women.

The selection of the participants were made on different grounds. The participants of the project were: Elsa, a woman of 39, from one of the day centers participating in the study of eight people with moderate mental retardation. Peter, a man of 45, who earlier participated in a longitudinal study (Brodin, 1992a; Brodin & Larsson,1989). Both Elsa and Peter live in the Stockholm area and work at day centers. The two other participants were Mats, a 29 year old man, and Malin a woman of 25. They are both from Jönköping and they too work at day centers. The names of the participants are fictitious. All four have been diagnosed as profoundly mentally retarded by doctors from the Social Welfare Authorities for the Mentally Retarded, by parents and staff at the group homes and day centers. They have been considered to be in need of communication support.

The project started in the autumn 1991. For two of the participants, the empirical study began in December, for the third in January and for the fourth in February. Previous to the start of the project, the staff from the day centers in cooperation with parents and staff from the group homes, jointly made a background description for each of the participants of the project. Those descriptions give a good picture of their situation of life, functional impairments and their functioning abilities to communicate.

During the research period the staff and parents were asked to make at least three telephone calls per week. All telephone calls have been recorded and coded. The records have been made in accordance with the

once made earlier, but have been adjusted to this particular user group. In the records are details of the duration of the conversation, initiator, subjects to talk about, the participants' reactions to the conversation and the number and kind of pictures transmitted. The people compleating the records were instructed to make a note of how the telephoning was performed, what instructions they gave the participants and to describe their reactions (Appendix No.3). The people responsible for the training, the parents and staff at the day center, had been asked to make notes in a diary every week (Appendix No.4). These notes were aiming to give a picture of how the training and telephoning developed and to give explanations to possible interruptions. Observations by video recordings have also been included in the work with the project. This has been done partly to give an idea of how the telephoning was working over time. Interviews with staff and parents have been proceeded continuously as well as at the final phase of the project in order to make it possible to assess the need for still picture telephones after the completion of the project. The questions have been semi-structured and have therefore given the possibility to safeguard points of views appearing in connection to these (Appendix No.5). The project was concluded at midsummer, when the holidays would make it difficult to maintain continuity. The total project time for the empirical study was, as mentioned earlier, between five and six months.

To summarize the following methods to obtain data have been used:

* background description (questionnaire)
* records from telephoning
* diary notes
* video recordings
* interviews

The study is both qualitative and quantitavie and data is presented as a summary as well as separately for each person. The study can also be described as longitudinal. In a study such as this, on people with profound mental retardation, it is essential to point out individual possibilities and difficulties and not make general conclusions.

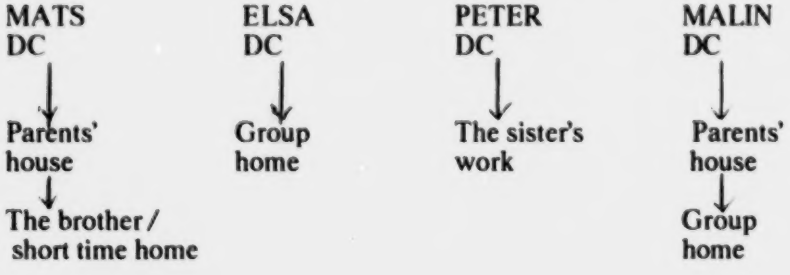


Figure No. 2 Project participants (DC = day center)

PERSONAL DESCRIPTIONS

The personal descriptions are based on details from relatives and staff and have been reported as carefully as possible (Appendix No. 2). Elsa's personal descriptions are compleated by the staff at the group home and the day center and in Peter's case by staff at the day center in cooperation with relatives. The description of Mats is made by his parents and Malin's description is made by staff at the day center in cooperation with her parents. The people working with the mentally retarded have discussed the abilities of the project participants jointly. This has been done in order to make the informations as correctly as possible.

PRESENTATION OF MATS

Mats is 29 years old. He has been growing up and living at home with his parents. The last two years, however, he has had the opportunity to spend one week every other month at a short-time home, in order to releive his parents from the burden. He has also spent the summers at a special cottage.

Mats has been at a training school for 10 years and an additional 4 years at another school. He completed his schooling in 1983. Since then he has worked at the day center, where his daily occupation is packeting, domestic training, participation in a music group, physical excersises, swimming and going for walks.

Mats' social network is mainly his closest relatives. He meets his parents daily and every week he is in touch with his two brothers. One of them lives in another town. A couple of times every month he is in contact with his 92-year old grandmother (living on the west coast of Sweden). Other relatives with whom he has sporadic contacts are his aunts and uncles with families. He is also in touch with his friends at FUB (The National Association for the Mentally retarded). Mats has no "contact-person".Mats has many hobbies. He likes music and going for walks and he "helps out" with various jobs both outdoors and indoors. He takes care of his cats, he watches TV and sometimes visits the FUB-leisure club.

An ordinary day for Mats means that he gets up in the morning, gets help with hygiene and dressing, eats breakfast and travels to the day center by bus from the mobility service. He works at the day center until it is time to return home around 16.15 in the afternoon. At home he helps empty the dishwasher, prepare dinner and make and serve the coffee. In the

evening he usually watches TV. Mats does not have contact with any other friends than his fellow workers at the day center and his friends at FUB.

Mats' functional impairments

Mats has a profound mental retardation and he can neither read, write or do sums. He has been diagnosed by experts on child psychiatry in 1968 and it was then established, that the damage to his brain was caused by a virus infection to the central nervous system during the foetal stage. Mats' vision is reduced, which in his case means an astigmatic vision. The impairment is corrected by eye glasses, which he uses daily. He has an abridgement, shortening of his legs, which is corrected by orthopedic shoes. This does not create any problem for his motor ability, which is well functioning. However, his fine motor skill is, slightly impaired. He is fumbling, clumsy and inhibited in his movements and he is not able to do his shoelaces for instance. As a resulting effect of the brain damage, Mats is sometimes restless and takes medicine to reduce the anxiety.

Picture/language/communication

Mats recognizes objects and persons from pictures and photographs, but not figures and letters. He has never used Bliss symbols or Pictogram for communication. However, staff and parents sometimes use pictures in order to stimulate speech and to find subjects for conversation. Mats is more or less motivated to communicate. Sometimes he himself initiates communication and he often replies when spoken to. Mats communicates with spoken language and his mother's opinion is that he has good understanding of language. He does not use communication aids.

Telephoning

In very short telephone conversations Mats "speaks with/answers" the brother, who lives in another town, his grandmother and his parents. On the phone, he recognizes voices of people close to him and he is capable of answering the phone by himself, but not making phone calls. A telephone conversation usually consists of Mats telling how he is and whom he is with, what he is doing and what he did earlier on during the day. His speech is monosyllabic and the conversations are very short.

PRESENTATION OF ELSA

Elsa is a woman of 39 years of age. Earlier she lived in a large institution in Stockholm, but at the moment she lives in a group home together with five other people. Elsa has been to occupational training for one year and previous to that she received special education in an institution during eleven years. She finished her schooling in 1980. At the day center her main occupations are communication training, stimulation and activities around various routines.

Her social network consists of daily contacts with staff and companions at the group home. Approximately once a week she is in touch with a person from another group home, the music therapist and her "contact-person" who is working at the group home where Elsa lives. Elsa has a cousin and she is also her "contact-person". Elsa is in touch with an aunt and her cousins, sporadically. Her spare time occupations are outdoor activities (mostly going for walks), dancing, visiting restaurants, swimming, listening to music and watching TV.

After her morning routines Elsa travels to the day center by the mobility service bus. At the morning gathering, they choose what food they are going to eat, the attendance list is filled in and they go through the activities of the day. After that she attends musical therapy, has lunch, takes a walk and, before it is time to go home, drinks her afternoon coffee. In the evening Elsa helps to lay the table, dispose of the rubbish and make the food. After dinner she relaxes in front of the TV and the day ends with bed time routines.

Elsa's functional impairments

Elsa is diagnosed by doctors as profoundly mentally retarded. How this diagnos was established and on what grounds is not apparent from the case book. The staff at the day center do not know if Elsa has a visual or hearing impairment. There are no records of any tests that could stipulate possible impairments. She is not using any vision or hearing aids. Elsa has epilepsy and takes medicine for that. She also has difficulty in speaking. Moreover, she is under investigation regarding the medical handicaps. She has well functioning fine and gross motor skills.

Pictures/communication/language

The staff does not know if Elsa recognizes objects or persons on pictures. She neither recognizes symbols (Bliss or Pictogram) nor numbers or

letters. There is uncertainty to whether she recognizes persons on photographs. At the day center they use pictures/symbols for communication, but the staff does not know if Elsa can interpret and understand them. The pictures are also used to make the local environment easier to understand.

Elsa is motivated to communicate, but she uses neither pictures/symbols, nor sign-language or spoken language. Her main method of communication is body language, which is more or less clear and easy to interpret. Elsa often initiates communication and sometimes replies adequately. She has never used a telephone and does not recognize voices of persons familiar to her on the phone. She is neither able to make phone calls nor answer the phone by herself.

PRESENTATION OF PETER

Peter is a 45 year old man. His first 12 years he lived at home with his parents and siblings. When Peter was 12 years old he moved to a nursing institution as his parents no longer could take the heavy burden that caring for the son involved. Their expectations were that Peter would get the best possible help and specialist care at the nursing institution, where he stayed for nearly 30 years. During those years he visited his home at week ends and holidays. Earlier studies of Peter (Brodin & Larsson, 1989) showed that he felt secure at that, but his father said in interviews, that he experienced emotional changes in his son. When Peter had first moved to the nursing institution he was able to laugh and show joy and when he was sad he could cry. These expressions of emotion decreased gradually during the years Peter lived at the institution. The father found it difficult to find a reason for the changes and he meant that the cause could be that Peter had grown older, but he also had a feeling that it could be that the son had been "institutionalized". In September 1986 Peter moved to a group home, where he lives with four other persons, two women and two men. These five people have one thing in common. They are all born in the 40's, other than that they have nothing in common. For the first time in many years Peter got a room of his own.

Peter has never been to any school and not until the last years at the nursing institution did he receive a half-time place at a day center. Today he is at a day center, where he has certain fixed activites such as colour and form, excursions to the forrest, swimming, visits to restaurants and music activities. Peter's favourite activites are to go for car rides and to go swimming.

A day for Peter involves fixed activities, which have been adapted to suit his individual needs. In the group home, he has no adapted activity and he spends a great deal of his leasure time sitting on his bed waving a rag about. He joins the staff and the other residents from the group home at their joint outings. Peter's social network is very limited. Both his parents are dead. The only relative he has contact with is his sister and she describes the contact as being sporadic. However, shortly after the start of the project he got a "contact-person".

Peter's functional impairment

Peter is profoundly mentally retarded and in his medical case book it says; "diagnose idiotia". He has a severe visual impairment and approximately at the time he left the institution eye glasses were prescribed. He is using them daily at the day center, but at his group home it is uncertain if he wears them. During the last years it has been established that he has liquid behind his eardrum. This distorts the sound and affects his possibilities to apprehend spoken language. This could result in pain. Peter uses orthopedic shoes and ortoses as his feet muscles are partly artrophied. He has started to use aids such as rollator and sometimes a wheelchair in order to increase his mobility. He has a gross and fine motor impairment, which results in difficulty to move if the floor surface is uneven and in difficulty to grab things with his hands.

Pictures/communication/language

Peter does not recognize pictures or photos of objects, persons or symbols. At the day center pictures are not used for communication or to emphasize the local environment. Peter communicates by natural reactions and he has never used any communication aids. He seldom initiates communication and his responses to communication are sporadic.

Telephoning

Peter has never telephoned anybody. It is difficult to establish if he recognizes voices of persons close to him on the phone or if he knows what a telephone really is.

PRESENTATION OF MALIN

Malin is a woman of 25 years of age. She lives in her own apartment in a group home. Earlier she lived at a relatively large nursing home, where she had her own room. Malin has been to training school and finished her schooling in 1985.

Her main activities are to play educational games, to draw and paint and to listen to music. Domestic training and contracture prophylaxis are also included in her activities. Her social contacts entail weekly contacts with her mother, father and sister. Approximately every other week she is in touch with her grandmother, grandfather and an uncle. In her spare time she joins in at the "Saturday Club", an activity , for which the FUB is responsible. Once a week she participates in a music group. Her hobbies are attending the "Saturday Club", listening to music and going to dances organized by the community . Malin has no "contact person".

Malin's functional impairments

Malin is profoundly mentally retarded. She has neither vision nor hearing impairment, but she has cerebral paresis, which results in motor disability. She is bound to her wheelchair. She has difficulty in communicating as well as gross and fine motor difficulties.

Pictures/communication/language

Malin recognizes pictures and photographs of objects and people, but not symbols. Neither at the group home nor at the day center do they use pictures for communication or to emphasize the local environment. Malin uses sign language communication and her main means of communication are a few symbols and body language. She has no communication aids. She often initiates communication and she always replies when spoken to. She is considered to be motivated to communicate and in need of communication support.

Telephoning

Malin sometimes uses the telephone to call her mother, father, grandmothers, uncle or syster. One of the staff helps her to make the call on those occasions. She recognizes voices of people close to her on the phone, but she is not able to make calls or to answer the phone by herself. She holds the receiver to her ear and listens and replies by making sounds.

THE FOUR PARTICIPANTS OF THE PROJECT

The four participants of the project are all considered to be profoundly mentally retarded. These judgements are formed by doctors from different fields. All except one of the participants are presently living in group homes and they all have a very limited social networks.

Additional impairments

The four participants functional impairments and means of communication at the start of the project are described below. The information is taken from the background descriptions.

The frequency of additional impairments is high. It is relatively common to have more than one additional impairment beside mental retardation. This has been confirmed in studies on rehabilitation of mentally retarded adults (Brodin & Lindberg, 1990). Two, probably three, of the participants of the project have reduced or impaired vision and all of them have difficulties in communicating. Several of the participants have mobility disabilities (3), medical handicaps (2) fine (3) and gross (2) motor difficulties.

Table 1. The disabilities of the project participants.

Participants	**M**	**E****	**P**	**M**
Age in years	29	39	45	25
Sex (m, f)	m	f	m	f
Functional impairments				
Profound mental retardation	x	x	x	x
Visual impairment	x	?	x	-
Hearing impairment	-	?	x	-
Difficulty in communication	x	x	x	x
Disability	x	-	x	x
Medical handicap	-	x*	-	-
Gross motor difficulty	-	-	x	x
Fine motor difficulty	-	-	x	x

* Concerns epilepsy

** E is at the moment under investigation regarding visual, hearing and medical handicaps

Means of communication

In table 2 it is stated that the participants use different ways of communicating and that their experiences of telephoning are limited.

From the table below it's evident that only one of the participants use spoken language and the others use gestures and body language. One person uses sign language communication with the help of a few signs. The participants often combine several different methods to make themselves understood. There is uncertainty to what extent the participants understand pictures and symbols like Bliss and Pictogram. None of them use these symbol systems as communication aid. Some of the day centers use symbols to emphasize the local environment, however. None of the participants are considered to recognize figures or letters. One person only has earlier used the telephone functionally, while another person, whith the assistance of the staff, have been able to call the parents and listen to their voices.

Table 2. The project participants way of communication

Participant	**M**	**E**	**P**	**M**
Age in years	29	39	45	25
Sex (m, f)	m	f	m	f
Means of communication				
Spoken language	x	-	-	-
Sign communication	-	-	-	x
Gestures, body language	-	x	x	x
Recognizes objects on pictures	x	?	-	x
Recognizes people on pictures	x	?	-	x
Has used the telephone earlier	x	-	-	-

STATEMENT OF RESULTS

THE USE OF THE STILL PICTURE TELEPHONE

The results regarding the use of the still picture telephone are based on the records filled in by parents and staff.

Table 3. The number of calls and their duration

	Number of calls	Duration On Average	Median
Mats	30	8 minutes	2 minutes
Elsa	39	6 minutes	5 minutes
Peter	15	3 minutes	2 minutes
Malin	39	8 minutes	7 minutes

In the table it is stated that Malin and Elsa took part in 39 calls each during the project period. Mats participated in 30 and Peter in 15 calls. The calls lasted between 3 to 8 minutes on average. Peter took part in the shortest call, Elsa and Malin in the longest ones.

Table 4. Conversation partners and initiator.

	Conversation partner		Initiator		
	Relative	Staff	Own	Relative	Staff
Mats	23	7	3(2*)	7	20
Elsa	17	22	0	11	28
Peter	15	0	0	0	15
Malin	19(10**)	20(2***)	13(11****)	5	16

* togehter with relative
** both mother and father
*** several of the staff
**** together with another person

In table 4 is stated that Mats and Peter in most cases were talking to their relatives. Elsa's and Malin's calls were devided equally between relatives and staff at the day center and group home. Malin communicated often with more than one person at the time and above all she frequently made calls to both her mother and father. Malin was the one to take most initiatives to call, but many of the calls were made together with another person. On two occasions she took the initiative all by herself. Moreover the staff took more initiatives to calls than the relatives did.

Table 5. Subjects of conversation

	Greet	Show objects	The telephone	Food	Outings	Other
Mats	16	27	0	6	4	0
Elsa	13	25	9	26	5	4
Peter	14	1	0	0	0	0
Malin	4	39	0	12	11	0
Total	47	92	9	44	20	4

Table 5 shows subjects dealt with in the conversations. Mats, Elsa and Malin often showed objects which they talked about. The most frequent subjects were to show an object and then talk about it. Only once was an object dealt with in Peter's case. Greetings were frequently exchanged in Mats', Elsa's and Peter's, but not in Malin's case. Malin required help to make the call and staff or parent assisting the call started off by greeting each other before it was Malin's turn to talk. Food and excursions were common subjects of conversation.

Table 6. Reaction to the conversation

	Mats*	Elsa	Peter	Malin
Looks at pictures				
Yes, concentrated	0	19	1	36
On request	0	2	0	0
Now and then	24	17	2	3
Touches the screen	0	1	3	0
No	1	0	6	0
Recognizes conversation partner				
Yes	24	6	0	39
Yes, we think so	0	21	1	0
No	0	2	0	0
Listens	0	5	2	0
Don't know	1	6	9	0
Looks happy	21	28	1	39
Strains the body	1	23	3	33
Looks worried	0	0	3	0
Shows interest	19	33	8	38
Does not show interest	4	6	9	0
Gets upset	0	7	0	0
Does not react	0	2	1	0
Other	6	13	7	1

* During five calls no picture was transmitted, and on one occasion Mats did not want to participate

From the above table it is made clear how the people participating in the project reacted to the calls. In some cases there were more than one answer to the first two questions about looking at the picture and recognizing the person. Mats' reaction was to look at the picture now and then and he often recognized the conversation partner. Mostly he looked happy and showed interest. Elsa often looked intensively at the picture or now and then. She probably recognized the conversation partner in most cases. In some cases it has been difficult to establish and it is also uncertain to what extent the picture was important for the recognition. Elsa mostly looked happy and she strained her body and showed interest. On some occasions she was upset. Peter looked a few times at the picture and even touched the screen with his hand on some occasions. It is uncertain whether he recognized the conversation partner. His reaction to the still picture telephone was often negative and he showed no interest. Malin almost always looked at the picture and only on three occasions was her concentration directed elsewhere. She always recognized the conversation partner, always looked happy, strained her body and showed interest.

Table 7. Type of picture

	Mats	Elsa	Peter	Malin
Picture of oneself	18	39	15	39
Picture of the partner	21	26	15	33
Photograph of staff	5	0	0	0
Objects were shown	6	16	1	38
Pictures	0	3	0	0
No picture was transmitted	5	0	0	0
Total number of pictures	55	84	31	110

Table 7 indicates that most pictures were sent via Malin's and Elsa's still picture telephones. Malin and Elsa transmitted pictures of themselves on every occasion and their partners mostly did the same. Malin and her conversation partner showed objects on all occasions except one. In Elsa's case pictures where only transmitted on three occasions, not as frequently as in Malin's case. Mats also showed one or several pictures of himself on most occasions and his partner did the same. Sometimes pictures of the staff were transmitted. On several occasions pictures of Mats' cats were transmitted. These pictures are categorized as objects in the report. On

Peter's still picture telephone mostly pictures of Peter himself or his relatives were transmitted.

DIARY NOTES

Diary notes - Mats

Mats' parents were informed about the project with still picture telephony for profoundly mentally retarded at an early stage and they then announced their interest in participating.

A still picture telephone was installed at Mats' parents home at the beginning of December 1991 and another telephone at the day center. A loudspeaking telephone as well as a preprogrammed dialler, the so called "Giant Button" was also installed at home. Mats was able to call the day center by just pressing the "Giant Button", in other words only one operation was necessary to make a call. A third picture telephone was placed at his brothers home or at the short time home during the weeks he was there.

The first call Mats made was from the day center to his father at home and lasted for three minutes. Mats was neither interested in participating in the process of calling nor in pressing the buttons on the picture telephone. At the beginning of the first call Mats was completely quiet, but later when he was told what to do he talked on the telephone. He looked at the picture of his father on the screen and said "daddy". He looked happy, strained his body and seemed interested. Six pictures were transmitted, three from Mats and three from the father. The pictures transmitted were of Mats, his father and of the "Giant Button". The conversation was about what they had been doing during the day, what Mats was going to eat for lunch and at what time Mats was going home. Mats was walking around in the room during the conversation. He now and then approached the telephone and answered with a few words into the receiver. The rest of the conversation was between one of the staff at the day center and Mats' father. During the following week Mats telephoned his father every day from the day center. During those calls Mats only participated a few short moments. Typical for the calls were that Mats approached the telephone, looked at the picture, put his ear to the receiver and then left. His father asked among other things if Mats recognized him on the pictures and Mats answered "yes". When the father asked further questions Mats past the receiver to the staff and walked away. The following week Mats was ill and the telephone was not used.

After Christmas a still picture telephone was installed at Mats' brother's home. The same procedure described above was repeated. Mats approached the telephone now and then and replied using a few words. On one occasion the loud speaking telephone was used and the father took part in the conversation. During the entire project a picture telephone was placed at the home of the brother, and Mats talked to him, his common law wife and their son. Mostly they transmitted pictures of themselves. The loud speaking telephone was used for a month, but it seemed like Mats was confused by talking on the phone without using the receiver. It was then decided that in future only the ordinary telephone was to be used. Mats was not interested in using the "Giant Button" in order to dial the telephone number and therefore it was not used either. One method of application of the picture telephone was to look through the pictures and talk about the conversation afterwards. The father could talk to Mats about what staff had been at the day center during the day by looking at the pictures transmitted.

Mats regularly stayes at the short time home. He brought the still picture telephone there on several occasions, but it was only used ones. The staff at the short time home felt that they had no time to use it. This was possibly due to the fact that they were uncertain how the picture telephone should be used.

During the periods Mats was ill, the still picture telephones was not used. When Mats had been using the still picture telephone for about one month, his behaviour when telephoning was near enough the same as at the start of the project. After one or two months use he showed the same pattern of behaviour as before when telephoning. He was interested at the beginning of the call, approached the telephone, talked into the receiver and then left and he would possibly approach the telephone again later. The staff at the day center thought it would be best to discontinue his participation in the project, because it was not working well. The parents opinion was that they could see that Mats had changed and in general had become more interested in calling during the project. He even spontaniously answered the ordinary telephone, but took no initiatives to make calls himself. The picture telephone was mostly used to call his brother and his family. Mats' little nephew was very interested in calling and Mats communicated with him using the picture telephone. At the same time the parents thought that they had been using the picture telephone too little and that it was not functioning well to call the day center. The telephone calls often came at an inconvenient time, for example in the middle of a meal. It was difficult to call at suitable times. The parents meant that it was important to create more opportunities to call. One suggestion was that Mats should call his brother from the day center. Mats was ill for several weeks and at that time another person with mental retardation at a neighburing day center

started to use the still picture telephone. This was an opportunity for Mats to have a new conversation partner, but he was not particularly interested in this contact. The occupational therapist at the day center said that "It's not possible to change Mats' behaviours and definitly not by using the picture telephone". She explained this by saying that she was of the opinion that the picture telephone was possibly more suitable at home, where it was more quiet and not as messy and noisy as at the day center. They tried again to use the picture telephone at the short time home, but failed as a result of technical problems. At the day center they continued to use the telephone during the spring, but Mats showed no interest. The staff several times expressed that they wished to interrupt the participation in the project, dispite that they all carried on untill midsummer, when the collection of data finished.

From the diary notes written by Mats' father it appears that at the beginning of the telephone calls Mats seemed happy to see the picture, but became uninterested when the call continued. The staff used to comment "Mats disappeared now". At the short time home, the staff was of the opinion that Mats would be upset if the parents contacted him there by telephone. Therefore they agreed on using the telephone only when they were about to collect Mats from the short time home. This failed due to the fact that the telephone had already been packed away. At the beginning of the year Mats was trained to answer incoming calls, but he put down the receiver as soon as the caller finished speaking. He replied, if he recognized the voice, which possibly was due to the fact that the person calling knew that Mats would answer and consequently directly addressed him. According to the father, Mats was restless and not receptive to telephone calls when staying at the short time home. When the project had been going on for two months the father informed us that Mats did not take any initiatives to make calls, but that he brightened up every time the father asked him if they should make a call. "Mats shows the greatest interest when we start off by showing earlier pictures", the father said and continued: "Mats takes a little stroll around as soon as he has answered a question which can be replied by yes or no". The father told us that Mats usually answers by himself, but often he stands by the telephone waiting to be told to answer. The father informed us that the telephone was used sporadically during a period of two months mainly due to illness in the family. However, the diary notes from the family shows an ambition to fulfill the project as best they can.

Diary notes - Elsa

The project started at the end of January 1992, as the day center was closed during Christmas and New Years. The still picture telephone was

introduced to Elsa by at first getting her acquainted with the new telephone. This was done together with the staff familiar to her. When the staff attracted her to look at the screen, she seemed interested, but the staff described that it was difficult to judge if she could interpret the pictures. Elsa showed a certain amount of curiosity to look at the screen, but it was not possible to say whether she recognized the picture of herself or the staff.

Elsa made four calls with the still picture telephone during the first weeks. On two occasions she was together with Eva, whom she knows very well. An interesting question at the beginning was, how Elsa would react to picture and sound at the same time. It appeared that she was active, concentrated and looked happy. On the other two occasions during that week Elsa was together with Berit, whom she did not know that well. Elsa made the call to one of the staff very familiar to her. She was less interested, active and concentrated than at the first two calls. On the other hand Elsa seemed to listen more intensively to the voice and looked like she was able to locate where the voice came from. "She turned her head looked at the receiver with a listening eye", according to the staff. In the notes from the staff at the day center it is recorded that Elsa was able to keep her concentration between 2 to 8 minutes. Interruption was mainly due to moments of distress or change of staff less known to her.

After using the telephone for three weeks, the staff informed us that they had been forced to change the routines of priority of activities due to illness at the group home. According to an earlier plan one telephone was to be placed at the group home and one at the day center, but due to illness the project started "internal" at the day center. When at last the telephoning started, the staff at the group home reported that it proceeded better than expected. They stated that Elsa enjoyed calling and that she looked and listened attentively at the monitor of the still picture telephone. The staff reported "considerable changes in Elsa's behaviour, since the still picture telephoning started" and that "her behaviours had become more mature and not as aggressive as before". The telephone was placed in a common space at the group home, as Elsa had no telephone of her own. One of the staff at the group home reported futher that "when we make the calls, Elsa takes my hand, and this I interpret as a sign of communication". When the staff at the day center transmitted a picture of Elsa's teddy bear, she reacted strongly. She laughed and looked at the teddy bear a long time. "Elsa enjoyes the attention and is starting to show what she wants. When she wants to go outside, she picks up her coat and gives it to me - this she did not do earlier". The staff at the group home told that they prepared the calls by talking about what pictures to transmit, a couple of hours in advance. The staff continued: "When it's time I call her and she comes without hesitation". On one occasion Elsa was

disappointed and had been miserable all day. She was not interested in receiving calls from the day center. Elsa looked at the pictures briefly without listening. According to the staff her being in such a bad mood most likely was because she was about to take ill. On the whole Elsa enjoyed the telephoning with the still picture telephone and this was the first time she was engaged in something usefull, which pleased the staff.

Several calls took place between two rooms at the day center due to illness and shortage of staff at the group home. When the project had been going on for one and a half month the staff from the day center reported that Elsa had been ill and they had therefore not been able to make calls as planned. Three calls were carried out the week she returned to the day center. The staff reported that Elsa seemed more interested and was looking alternately at the loudspeaking telephone, the screen and the people nearby. Elsa's "daily form" in other words her mood and general state of health was important to whether she would be interested in calling. At the end of the second month "good bye pictures" were introduced to conclude the telephone calls. This was done by Elsa's partner sending a picture of herself and making a good bye sign with the hand. The assistant then held Elsa's hand and made the same sign. After two and a half months, the staff at the day center reported a decline in calling due to illness. Elsa was passive and indifferent. Attempts to send pictures of real objects were done. Eva held an apple in front of the camera and immediately after that she went into the room where Elsa was sitting and showed her the apple. Eva pointed to the apple and the picture of it and then gave the apple to Elsa. She was delighted. The call continued and Elsa spontaneously put her finger on the "freeze button". Berit guided her to press the "freeze-" and "transmission buttons".

The staff at the day center continued to talk about the apple except for one call where the apple was exchanged to a banana. Elsa's well being was important to the outcome of the call. Sometimes she was uninterested, sometimes interested, active and happy. "It feels like a good way to raise an interest in telephoning by first showing a picture of the apple, then the apple itself and compare it to the picture" Eva commented and continued: Sometimes Elsa reacts with recognition, although it is difficult to interpret. We think that the transmitting beep gives Elsa a signal to look at the picture, but she usually listens more to the voice".

Shortage of staff and illnes made it difficult to call, on some occasions and Elsa's "daily form" has also been affected by this. Elsa had spontaneously on two occasions pressed the "send" button and when the call was finished on request again pressed the transmitting button. On one occasion Elsa "talked" to a mentally retarded man from the day center. He has a special relation to Elsa, who was very active and happy. When Elsa

after the call looked at the pictures of herself she most probably recognized them. Elsa was uncommitted and seemed rather bored at certain periods. At one of the calls she started spitting on the floor and energitically pressing the buttons on the telephone. When she also pressed the buttons on the loudspeaking telephone, her behaviour was interpreted as a protest and an attempt to end the call. However, Elsa was persuaded to stay put. She took a quick look at the picture of a coffee cup and when Eva brought her a cup of coffee, Elsa drank it. She then handed the cup to Berit (which means according to the staff "I want more"), but she was misunderstood. Elsa then annoyingly got up from the chair and the call was concluded. One of the staff, who had been absent for some time, noticed a striking awareness in Elsa's telephone calls. She was more active and pressed the buttons, and because of that sometimes the pictures were transmitted back to her. Elsa looked at the picture to see if it met with her expectations. She said that this happened "when the food plate or the ball was transmitted instead of the fruit or the coffee cup, which had been the most recent topics". She reported further that they had not been able to make telephone calls to the same extent as expected due to holidays, illness or "shortage of staff".

The telephoning was well functioning when Elsa's physical and mental status was good. The staff were of the opinion that Elsa was able to interpret pictures. With a recognizing smile she viewed the pictures in a different manner. Sometimes she looked at them for quite a long time and sometimes she just glanced at them. Sometimes she looked cross or bewildered especially if the pictures did not correspond to what was said. "The beeping" sound at the transmission of a picture was a signal for Elsa to look at the screen.

Diary notes - Peter

The staff reported that Peter had been ill in influenza during the Christmas holidays and the major part of January. They were worried because he normally regresses and becomes absent. Peter's communication partner was his sister, who had the telephone at work. This meant it was not possible to make telephone calls when she was absent: on a business trip or off duty. They abstained to make telephone calls in the events of Peter not bringing his glasses with him to the day center. On several occasions they had started to make a telephone call, but could not go through with it because Peter did not have his glasses on. The staff reported on several occasions that "Peter has called his sister, but unfortunately she was busy and we will try again on Monday". Later the staff decided to first call the sister and make an appointment for Peter to call her. This to avoid him loosing the motivation to call.

At the end of February another period of illness led to Peter going back "to his usual habits and development". After several weeks the staff noticed a slight improvement. "He has started to raise his eyes to look at us, which he has not done for some time", they wrote. The staff tried to find a reason for the regression and they thought it could be due to the fact that another person with mental retardation had moved into Peter's room so that he had to move into a new room. Besides this, the new person was very demanding and needed a lot of attention from the staff. Peter had become jealous and angry at that person, and the staff at the day center felt that Peter had been forced to retreat.

A new report of absence. This time it was a question of the sisters holiday, and besides that Peter did not attend the day center due to his psychological regression. The staff at the group home had informed that they would spend more time with Peter and the staff at the day center experienced that to be positive. During three weeks all the persons with mental retardation were at home, because the day center was moving to new premises. As it became restless and messy while they were moving, no telephone calls were made.

The staff noted that Peter was very intravert och was cuddling and sucking his clothes. The changes came fast and unexpected. The previous week when Peter felt quite well he had fetched his own mug from the kitchen sink and put it in his place at the table. This was a great progress, according to the staff. Despite that Peter often retreated, there were a few things that he did. He participated in a music activity, which lasted between 1 and 1 1/2 hour, where he played the tambourine. Earlier he used to lie down on a matress while the others played. Moreover "he is rocking forward in the wheel chair. He knows that we take him for a rally-drive by giving us that signal", told the staff.

Diary notes - Malin

Malin came in to the project at a late stage. The staff at the day center where she works had heard of the project and expressed their desire to participate. At the stage of introduction we discussed whether Malin had a profound mental retardation or not. According to doctors opinions Malin did belong to that group and taking that into consideration it was decided that it would be suitable for her to take part in the project. At the start of the project some of the staff at the group home were questioning what a still picture telephone could contribute to Malin. She was already able to speak on the telephone. On the question on how she went about it, the staff answered that it was true that she did not take any initiatives to make calls,

but that she was pleased to participate in telephone conversations. She listened and replied by making vague sounds and by facial expressions. She depended on having a person beside her to hold the receiver and to interpret the facial expessions to the partner. Some of the staff at the day center presumed that Malin would be able to use signs on the picture telephone, as she was already using a few signs in communication. They also reflected on whether Malin would be able to learn to take initiative to use the ordinary telephone by getting access to the picture telephone.

Picture telephones were installed at Malin's parents home, at the day center and at the group home at the end of February. To be able to use the telephone Malin neaded help to call, to lift and to hold the receiver. In order to facilitate the handling Malin got a loudspeaking telephone and the dialler "Giant Button". However, she would rather use the receiver and she was not able to press hard enough on the Giant Button. Because of that an ordinary telephone without adaptations were used.

The first call was made by Malin's mother to the day center. Malin reacted positively with movements in her whole body and she looked happy during the call. She showed interest by intensely fixing her eyes on the screen and she looked like she recognized the picture of her mother. Malin transmitted two pictures of herself and the mother two of her. The conversation was about the events of the day. During the first week Malin talked to her parents five times on the picture telephone at the day center. The second week of the project the first call between the group home and the home of the parents took place. Malin looked happy and she recognized the parents on the picture. She showed interest but only looked at the pictures now and then. Malin's journey home, which was to take place the following day, was discussed during the call, also her namesday and her clothes. Besides the parents home, the day center and the group home, Malin communicated with staff and friends at another day center.

After one month of using the picture telephone the staff at the day center thought that it was working well, even though they did not make the three calls per week which was agreed on. It did not always fit in with their or the receivers routines. The staff had been in touch with Malin's parents and were of the opinion that they had a very positive attitude to the picture telephone. Malin had indicated that she wanted to call by pointing to the telephone. This she had not done before and the staff thought this was an important improvement. A problem arising was that the pictures in the memory were not possible to store, because the main electric power was cut every night at the day center. The staff tried to take measures to avoid this happening and sometimes they succeded in preventing the power cut. To be able to reproduce the pictures and go through and discuss them was shown to be an important field of application for the still picture

telephone. It created possibilities for subjects of conversation directly connected to her own experiences and also ideas for new topics. As an example we can mention the situation when Malin had received a new swimsuit. She could show her swimsuit on the screen and her partner could associate with this in the conversation and use the memory later on. Another example is when Malin's mother had been to the hairdresser and showed a picture of herself afterwards. Malin and the staff could then talk about this.

After one month even Malin's mother thought that it was working well with the picture telephone. She pointed out that she had better contact with the day center, which she experienced as positive. The mother reported that Malin used to show her when she wanted to make a call by pointing at the telephone. The staff at the day center and the mother both experienced the forms especially the subjects of conversation difficult to fill in. It was difficult for the staff to know what the mother had been saying on the phone and vice versa. The mother told that Malin had shown the sign for swimming on the telephone and in that way she indicated that she was going swimming the next day. She would not have been able to do this without the picture telephone, and the mother argued that her daughter definitely had benefited by using the picture telephone. After using the picture telephone for one month the staff at the group home did not think the telephone had made any changes in Malin's behaviour worth mentioning. They also thought that the use of the telephone was limited, as there were not many people to communicate with. They agreed that the contacts with the parents and the day center had improved, but their opinion was that this was not a result of the picture telephone itself. They also pointed out that they were not used to close contacts with the parents, as "those who are living in a group home are adults and do not have close every-day contacts with their parents". After four months use, both the parents and the staff at the day center still found the still picture telephone positive and functional. At the group home, on the other hand, they were still sceptical to the purpose of using the picture telephone and were not of the opinion that it made any contribution compared to the ordinary telephone.

INTERVIEWS

At the final phase of the project interviews were made with the people responsible for the training and with the parents. The purpose of those interviews was to get more information on the implications that the use of the still picture telephone had on the participants and to give us an idea of the need to keep the equipment. The still picture telephones have been

extended with a loudspeaking unit and a dialler the Giant Button, which has a one-choice function.

Interview with Mats' parents.

The still picture telephone was placed in a study room at home. Mats was used to calling from that room, where the ordinary telephone usually was placed and it worked well. Technically the equipment has been functioning well, but a few disadvantages have been experienced. If there for example is more than one telephone connected to the same line, the still picture telephone cuts off the other telephones. This has been the problem both at the day center and at the group home. The problem can easily be avoided by connecting the picture telephone to the last incoming socket in the house. The parents also pointed out that the buttons on the loudspeaking unit are stiff and difficult to use. The buttons to operate the still picture telephone are placed too close to each other and it would have been better if they had been placed at the bottom edge of the picture telephone. The picture could have been larger and the memory could have had higher capacity so that more pictures could have been stored. The loudspeaking unit was used at the beginning of the project, but Mats often became uneasy when the sound came directly into the room and not from the receiver like he was used to. At first "The Giant Button" was used but as it was possible to have that function on the loudspeaking unit it was unnecessary. Mats neither has disability nor perception disturbances and therefore is not in need of such an aid. The parents suggested that it would have been useful if the dialler had had pictures of the people one could call up. The parents were of the opinion that the picture telephone had the same function as an ordinary telephone did for Mats and that his pattern of behaviour was the same as when he used the ordinary telephone. He often takes an interest at the beginning, but then he leaves. Mats became more experienced in telephoning since the start of the still picture telephone project and has started to spontaneously answer the telephone, which he did not do earlier.

The use of the picture telephone has had some other positive effects. The parents feel that they got to know the staff at the day center better. The picture telephone has worked as a kind of contact media by using the pictures stored in the memory to talk to Mats about the daily events and about the pictures transmitted. They also feel that Mats has got better contact with his brother and his family through the picture telephone and that they themselves got better contact with their grandchild. To talk to the little grandchild through the picture telephone worked very well for some time, but he started to take more interest in the buttons on the telephone, experimenting and playing with them. To sum up, the parents feel that the

picture telephone has added someting positive to the daily life. They also think that it has been interesting and exciting to use the picture telephone and it has enriched their everyday life. The main benefits have been that their contact with people around Mats has improved and that Mats has become more interested in answering the telephone. They also mean that it has been positive to be able to go through the pictures after the call and to have the opportunity to talk about them. This has contributed to the fact that they have had more subjects to talk about.

One disadvantage with the picture telephone has been that the number of people one can call are very limited and sometimes this makes one feel that the contacts are constructed. This feeling was strengthend by the fact that Mats often left the telephone after the call had started. The parent and the staff had to talk on the telephone and at the same time try to motivate Mats to talk. This often took place while other activities went on nearby at the day center, which made the situation feel unnatural. The parents are of the opinion that Mats does not have a real use for the picture telephone in the present situation. However, they forsee a possibility for the future situation for Mats. Eventually he will have a contact person and they beleive that he would be able to make use of the picture telephone to communicate with this person. Mats answer is "no" when he is asked if he would like to keep the still picture telephone.

Interview with staff at Mats' day center

The still picture telephone has been functioning well and the staff at the day center have enjoyed using it. Everyone at the day center have been interested in using the still picture telephone. However, the environment at the day center is niosy and the staff points out that the still picture telephone needs to be placed in a quiet place. They have not made any technical adjustments for the still picture telephone, but have used it in connection with the ordinary telephone at the office. They tried the Giant Button, but found it not usefull, as Mats does not make the calls by himself. The staff means that the picture was of good quality although it is small and feel that it was easy to handle the picture telephone. One problem has been that they have been forced to change socket every time they used it. If not, the other telephone connections would have been cut off.

The staff stated that their attitude towards using the picture telephone was positive from the beginning of the project. They have tried to use it, but as Mats was not very interested they felt that it was meaningless. Even if he was interested in making the calls, he did not seem to understand the purpose of calling. Others would have to lead the conversation and by

asking questions all the time direct Mats into the conversation. This would work on some occasions, but very often Mats would leave the telephone after the opening phrases. This had led to the calls being performed mainly between the staff and a parent. It has also been difficult to find natural subjects of conversation and to get Mats to participate in the calls.

The use of the picture telephone at the day center has not affected Mats' daily routines to any desirable extent. It has not affected his behaviour or ability to communicate. The staff means that it is difficult to know if Mats have at all benefited from the picture telephone. He has not taken any initiatives to use the telephone, but has rather been against it. His attention has only lasted for a few seconds. He has for example showed interest in pictures of the family's cat showed on the screen, but has quickly lost interest and has afterwards not been able to remember seeing the cat.

The staff feel that communicating through the picture telephone has been constructed due to the fact that Mats has not participated. The staff points out that normally they do not have the kind of contact with parents that is demanded in the project. At the end of the project the staff felt pressurized to make calls and the still picture telephone became a bad conscience. They also felt that they did not have enough time to use "this kind of aid" at the day center. It is not possible for a person out of the group of staff to spend time for such a purpose. They were releaved to return the picture telephone and believe that Mats does not benefit from a picture telephone at the day center.

Interview with staff at Elsa's day center

The interview was made with staff at the day center. They told us that Elsa had been using a loudspeaking telephone in order to decrease the amount of actions to make telephoning easier. She also had the automatic dialler, the so called "Giant Button". The still picture telephones were placed in two separate rooms at the day center and for a short period at the group home. Two people out of the group of staff have been responsible for her training. Placing of both telephones at the day center was mainly a consequence of the many changes of staff and illness among the staff at the group home.

At the start of the project the staff at the day center told us that they were not sure if Elsa could interpret and understand pictures. It seemed like she only responded to the sound at the beginning, meaning the voices of the conversation partners. After some time though they were more certain and they believed it had been proved that Elsa could understand pictures. Their goal was to investigate Elsa's abilities. The staff had been

reconnecting Elsa with concrete objects, which increased her possibilities to comprehend. In other words the picture on the screen has been emphasized by a concrete object such as an apple or a banana.

Sometimes it has been necessary to change the angle of the screen on the still picture telephone in order to get a better position when sitting down and to increase quality of perception. The screen is rather small and the staff requested a larger monitor with possibly better picture quality, as some of the pictures are difficult to interpret for a person with impaired vision. The two still picture telephones were placed in separate rooms at the day center, using separate incoming lines. During still picture communication no other activities were performed in the room. The telephone Elsa has been using has been placed in the same room throughout the project and the same people have been assisting her to call every time. In order to get continuity to the operation it has been scheduled. Elsa has in this way received individual training, which has been experienced as being positive by both Elsa and the staff. When no one has understood her or when she has been misunderstood she has become very irritated. On the occasions when Elsa has experienced the telephoning negatively it has been caused by external effects, such as unrest in the surrounding environment.

Elsa has received a lot of attention during the project and she has, according to the staff, become an important person. Everybody, both the recidents and the staff feel responsible for her and take an interest in what she needs. Earlier Elsa has never spoken on the telephone, but she has always been interested in observing and being together with other people. She has earlier been specially attached to another person at the day center, but during the project she has started to make contacts with others as well. The staff state that the still picture telephoning has affected her daily life in a positive way.

Interview with Peter's sister

In conversations with Peter's sister she tells us that she has not noticed any changes in Peter during the project. The still picture telephoning has been functioning badly, which partly has been for environmental reasons. The group that Peter is part of at the day center has moved to another day center and a lot of time and work has been put into preparing everyting there. The sister had the experience that it was difficult to be availabe when Peter called her at work.

She told us that Peter recognizes her voice on the telephone, but that he probably does not comprehend that the person on the picture is the same

as on the phone. He is not able to intergrate visual and hearing impressions. On the advice of the sister the project is discontinued in April in connection with the moving of the day center. She is of the opinion that Peter does not benefit from the still picture telephone.

Interviews with staff at Peter's day center

At the latest contact with the day center it became clear that two of the assistants were off duty in order to try other employment. The rest of the staff were still working there. The staff at the day center experienced moving the day center to another as a very big problem. The working methods at the new day center are different from the ones they were used to. One such method is a grouping system where each activity decides which group to belong to. The residents are divided into five groups and change group for each activity. This means that the staff does not follow up a particular group or person all day. Peter is at the day center two half days and three whole days per week.

Peter does not feel psychologically or physically well according to the assistant. He seems to have a stomach ache and his body is often tense. He continues to take riding lessons once a week, an activity he has had for nearly three years. He also continues his music activity once a week. A man from ABF (The Workers Educational Association) comes to the day center and takes a group of three mentally retarded people for a music session. Peter livens up at these sessions. He smiles and laughs and he seems to recognize the music they play. The assistant says that "it seems like he recognizes the songs they play and this maybee is because his mother used to sing them for him when he was little".

The telephone has been placed in a separate room at the day center. This means that it has usually been peaceful and quiet during the telephone calls. The big problem has been that the receiving telephone has been at his sisters work. Peter has often together with his assistant gone to the telephone in order to make a call, but without getting any reply. Peter has not been interested in the picture but he has concentrated on the voice instead although he has been touching the screen with his hand. The staff evaluates Peter not to be in need of the telephone.

Interview with Malin's parents

The mother thinks the picture telephone has been working well in every respect. Technically they have had no problems. The mother feels that the telephone has added something positive to Malin's life even if it has not

affected her daily life a great deal. She means that every little change, giving Malin better possibilities to raise the quality of communication, is meaningfull. She feels that Malin's possibilities to direct the communication was increased by her being able to choose the subject of conversation through the pictures and by taking initiatives to call. During the period the picture telephone has been used, the contacts with Malin have been more frequent and regular. The mother would like to keep the telephone and continue to use it. However, she thinks that the use of the telephone should have been structured more clearly from the beginning. The telephoning is often connected with problems, as the person one is calling does not answer, is otherwise engaged or is not able to concentrate on the picture telephone for other reasons. It is important to plan in advance how often and above all when to make the call. The calling itself demands some preparations and Malin gets very disappointed if the call does not get through.

Interview with staff at Malin's day center

At the day center the staff stated that the picture telephone had been working well and they are positive to continue using it. They meant that by using the picture telephone Malin had become more active and concentrated. Technically they thought the telephone had been well functioning even if certain improvements could be done, for example a larger and clearer picture. They also pointed out that if their time had not been limited, they would have liked to work on adaptions that would have made it possible for Malin to intedependently make the calls. The picture telephone has been placed in a store room at the day center and this has worked well although it has been a little difficult to get Malin's wheelchair in the room. The door to the store room has always been kept open and Malin has had the possibility to point to the picture telephone whenever she wanted to use it. The staff are of the opinion that the picture telephone has been a positive experience for them as well as the other mentally retarded people at the day center. Several of them have been interested in the picture telephone and have appreciated calling to another day center and "playing" with the picture controls.

The staff feels that the picture telephone has contributed a lot to Malin. She has become more aware and keen during telephoning and she gets more stimulation. They think that often it is difficult to find "own" activities for people with the kind of impairments that Malin has. An important aspect is that the telephone gives Malin an activity of her own at the day center and the telephone keeps and extends her social network. It also creates new subjects to talk about and gives more meaning to the communication with Malin and an opportunity to increase her social

contacts. They only wished they had more time to plan the use of the picture telephone. The staff think that two people should have shared the responsibility for telephoning. They would like to continue using the picture telephone, but like to make a better timetable for it.

Interview with staff at Malin's group home

Technically the equipment has been functioning well at the group home. However, the staff does not feel that the use of the picture telephone has made any contribution to Malin. They see no changes in Malin's behaviour which they can connect to the use of the picture telephone. Malin has not taken initiative to use the picture telephone and she is not able to use it without the help of the staff. Even if the parents have had contact with Malin more often than usual during this period, there has been no changes in quality. The staff means that she benefits just as much from using an ordinary telephone. They say: "The picture telephone is a luxury, we think it's fun but it is not necessary" and continue: "It is better to make use of the fact that she is capable of talking on an ordinary telephone. She does not need the pictures". On the question of their opinion on Malin using the picture telephone the staff gave the answer "Not very positive, others need it more than Malin. After all she can grasp what they are talking about. The purpose of what it can give Malin is unclear." The staff at the group home does not feel that the picture telephone has affected Malin's daily life in any way and has not affected their own daily work in a positive way. They think it feels constructed to have to make calls that often and that Malin probably does not appreciate talking to her mother if it happens too often. They say: "It is better to let a whole week pass so that Malin is longing for her mother and father". The picture telephone has created opportunities of contacts between the staff at the group home and the day center, but the staff at the group home is questioning whether this is a good thing. "It can be too much, maybe it brings about something that is not needed", they mean.

As Malin is grown up, the staff are of the opinion that her different worlds should be separated. The staff say: "Ourselves, we do not often make calls to our place of work from home." The staff at the group home are of the opinion that development of new technical aid is a good thing, but they emphasize the importance of the right person getting the right equipment and there comment is: "It also costs money". They think that it is unnecessary for Malin to have a picture telephone, but are willing to continue using it if the parents and the staff at the day center wishes to do so. However, to be able to continue, the picture telephone needs to be moved to a more suitable place than the office. The staff suggests that the

picture telephone be placed in Malin's room and that the telephone soccet there should be used.

Towards the end of the project time very few calls with the picture telephone were made. At the day center the staff informs us that the group home not once had telephoned them and they have not felt motivated to call them, due to their lack of interest. Most of the calls have taken place between the day center and a picture telephone placed at another day center.

The staff at the day center and the parents wishes to continue using the picture telephone and at the group home the staff are willing to help if the others decide to continue. In order to organize the future use of the picture telephone, a meeting between the mother, staff from day center and group home and the project leader took place. A time table for future use was worked out. Three calls per week were planned and at each call at least two pictures should be transmitted. At the group home the picture telephone was moved to Malin's room. A file containing black and white pictures should be available at all three places where the picture telephones were placed. These files were to be prepared by the staff at the day center. They all agreed to continue using the picture telephone and they were pleased with the plan.

CONCLUSION

Elsa and Malin are using the telephone most frequently. Both of them have participated in 39 calls all together, while Mats participated in 30 and Peter in only 15 calls. The length of the calls has varied depending on the participant. The longest calls, on average 8 minutes, were made by Malin and Mats. Regarding Mats, it has often not been a question of active participation from his side, but rather a process of trying to convince him to take part. This has been more or less successful. He has not been particularly interested in phoning and a great deal of the time has been spent on trying to get him involved. Elsa's calls had the average of 6 minutes and Peter's 3 minutes. The two women have been the most active during the telephoning and they have also transmitted most pictures. Malin has twice taken the initiative to make calls all by herself and Mats has done the same on one occasion. Several initiatives have been taken in cooperation with the staff. Elsa and Peter have not taken any initiatives of their own.

Mats has had three still picture telephones at his disposal. One has been installed at the day center, one at the parents house and one has been moving between his brothers and the short time home. Mats' interest in

the telephone has lasted for a short moment of time. The staff at the short time home reported that they have not had time to use the still picture telephone and the staff at the day center several times pointed out that they wished to discontinue, as Mats was not interested.

At the day center the staff felt that they had to little time to spend on "this kind of aid". They comment that it is not possible for one person out of the group of staff to use his/her time for "such a purpose". They also make a point that they think "the still picture telephone is better suited in a home environment, than at the day center". They feel relieved to be able to return the picture telephone after the project is concluded. The parents and the brother have been more positive and been aiming to accomplish the project in the best possible manner. At the interview the parents said that they had got to know the staff at the day center better and this has been a positive experience. The staff at the day center, on the other hand, has pointed out that they normally do not have as much contact with parents as the project has required.

Regarding Mats' telephoning it seems to be a question of lack of time on behalf of the day center. If one person receives a lot of individual training and attention the result is that others get much less attention and aid and this has been experienced by the staff as a conflict. From the staffs point of view, there is a question of priority. As a consequence of this there has been a feeling of stress and insufficiency among the staff and they were relieved when they could return the still picture telephone. It appears to be the staffs opinion that Mats had no need for a still picture telephone. This is probably the result of Mats not being interested and not responding to the staffs efforts at the process of telephoning. The staff comments that the telephone is probably better suited to be at home than at the day center.

Despite all this the parents view is that Mats has become more familiar with the telephone and he has started to spontaniously answer the telephone. From the parents comments it has been apparent, that the still picture telephoning has had additional effects. They are saying that their contact with the staff at the day center has been improved and they got to know them better during the project. On the whole, the family has experinced the use of the still picture telephone as positive and exciting and feel that is has enriched their daily life.

Elsa has had two telephones at her disposal, one at the day center and one at the group home. The latter was moved to the day center after a short time. Elsa has a loud speaking telephone as well as an automatic dialler. The still picture telephone has also been used by other residents at the day center. All together eight people have used the telephone. Elsa has been ill several times during the project and her general health has varied

strongly. The staff has been using the still picture telephone to teach Elsa different concepts. They have strengthened her sense of conception by connecting a concrete object to a picture. They have also been training her to choose between various objects, which have first been projected on the monitor and then shown to her in real life.

The staff has established that the use of the still picture telephone has been of great importance to Elsa's social status in the group. It has also been important for her personally, as she has received a lot of attention and has become an important person. She has received individual training which has meant a lot to her.

The staff's desire is for Elsa to keep the telephone, as they feel that her situation has changed socially during the telephoning. She has become an interesting person in the eyes of the other mentally retarded people at the day center. Earlier Elsa has been very dependent on a one-person contact and has had difficulty in attaching to more than one person. A narrow circle of contacts has been essential to her well being. The statements from the interviews have indicated that there has been change in this pattern, meaning that Elsa has "discovered" new people at the day center. The telephoning has been important from the social and emotional aspects.

Peter has had one telephone at the day center and one at his sisters work. It has been difficult to arrange suitable times for the telephone calls to Peter's sister. This has resulted in very few calls during the project. It has also been inpractical to keep the picture telephone at work, as the actual work always must have prority. Besides this, it has been a disadvantage to only have the possibility to call one person.

Despite the fact that the staff has been interested and keen to make a good thing out of the project, it has not succeeded. One of the reasons for the project beeing unsuccessful has been that Peter often has been ill. This is relatively common if you have a severe multiple handicap. One gets infections quite often and this affects the general condition.

Another reason has been that Peter to a great deal is depending on a personal assistant. He is not able to do anything by himself and needs individual support in everything he is doing. This problem could be solved if Peter had a person devoted only to him, his own assistant. This is made clear by the staffs comments both from the day center and the group home. They all agree that Peter does not get enough attention according to his needs. A technical aid is not the solution for Peter as he is more dependant on a social, human assistance. A human being's hand would be the best aid for Peter and it is most probably important that all the efforts that are being made to improve his living conditions should be on an

indivudal level. He is still in need of communication support, but most of all he needs a personal assistant who can devote his/her time to him.

Malin has had three still picture telephones at her disposal. She has had one at her parents house, one at the group home and one at the day center. In Malin's case the picture telephone has contributed to a better contact between the parents and the staff at the group home and day center. The staff at the group home are of the opinion that the contact can be too much. They mean that it is not always a good thing that the staff at the group home and day center has frequent contacts. They probably feel that Malin, who is a grown up person should have the possibility to be more independant and have a life of her own away from the work at the day center.

Despite all, several comments point to the fact that the picture telephone contributes to subjects to talk about and a common ground to stand on. Those who have worked with Malin think that to use the still picture telephone is interesting and exciting. The only ones questioning the need for the still picture telephone are the staff at the group home. They have regarded it as a luxury and pointed out that it costs money. At the concluding meeting it was apparent that they were willing to continue if everybody else believed it to be important to Malin.

Malin has showed interest in telephoning and she has also started to take her own initiatives to use the telephone. In Malin's case it is obvious that the still picture telephone can facilitate the continuity of her existance. The staff at the group home does not seem to be as conscious about this as the staff at the day center. The importance of a well functioning social network for Malin, has been specially emphasized by the mother and her opinion is that the still picture telephone has contributed to maintain such a social network. In Malin's case it seems to be important that the use of the picture telephone is carefully planned together with everybody involved and that there is a structure to the usage.

DISCUSSION

The purpose of this project has been to study if people with profound mental retardation can benefit from a still picture telephone in their daily life. The questions put forward at the start of the project were if transmission of pictures via the telephone network facilitates telephone communication and if the still picture telephone contributes to increase the possibilities of social contacts.

In order to obtain the data necessary for the project, different methods have been used such as a questionnaire regarding the participants background situation, functional impairments and judgements, records of the telephoning, diary notes and interviews.

Furthermore, videorecordings have been made in order to clearly illustrate the course of events at the telephoning. The videorecordings are not included in the report. The questions have been answered by relatives, staff at the group homes and day centers. The procedure of action is in general based on earlier studies for still picture telephony for moderately mentally retarded people (Brodin & Björck-Åkesson, 1991). In order to increase the understanding for the possibilities to use still picture telephones, our ambition has been to give an overall picture of the project participants and their environment.

The study has indicated that the use of still picture telephones for people with profound mental retardation can be assigned to questions concerning personal/individual factors, communication, the social network and organization/system.

Personal/individual factors

At the individual level the fundamental condition to be able to benefit from the the still picture telephone is that it fulfills a real need. If there is no real demand the use of the telephone becomes constructed and will in the long run feel unnatural for the person with mental retardation as well as for relatives and staff. Relatively early in the project it became evident that Mats for example was difficult to motivate to the task of telephoning and at an early stage the staff also indicated that they would like to discontinue with the project. Even if the parents' judgement had been, that Mats had a need for the still picture telephone, it would not have worked in the long run as the staff did not see the need. In this case there was no real problem as everybody involved agreed that Mats did not have a need for a still picture telephone.

A functional need and a functional field of application emerges from Elsa's telephoning, namely to train her formation of concepts. In her case it has been well functioning to use the still picture telephone as a tool in the process of learning.

Communication.

The still picture telephone has contributed to new subjects of conversation emerging while using the telephone and to an increase in the continuity of contacts. The common activity has in this respect contributed to supporting the communication and give conceptional training. To have common experiences and subjects as well as objects to talk about is crucial to how the ability to communicate developes (Brodin, 1991; Brodin & Björck-Åkesson, 1990; Björck-Åkesson, 1992). The communicative competence is a question of adequate communication in everyday life (Light, 1989). An aid such as the still picture telephone can compensate the person with communication disorders. Quite often it is reported that the one who has a language or communication disorder is the weakest part in the communication (Kraat, 1985). The still picture telephone adds a new dimension as the concept of the communication is strengthened. An advantage with the still picture telephone is that one can store the pictures in order to reproduce them and look at them after the call is finished. This function has been important to Mats, Malin and Elsa.

It is evident from the diary notes and the interviews that Elsa and Malin have made progress in their communication and that they have benefited from the still picture telephone. Malin seems to be stimulated by using the picture telephone. She is also using it functionally in order to show things that can be difficult to explain or describe by other means. The still picture telephone to her has the function of a communication aid. It compensates and alleviates her reduced ability. The change emerges from the quotations and is based on the parents as well as the staffs conclusions.

For all the participants the content of the communication has been closely connected to everyday life. It has been a question of showing different objects, to greet one another and to talk about food. The activity to transmit pictures has varied and Malin is the one who sent most of the pictures.

Apparant regarding communication is:

- that the content of the communication becomes more functional and clear.

- that an increasing frequency in using the still picture telephone is established.

- that there is a possibility to go back and look at the pictures stored.

- that there are subjects for conversation.

The social network

Relatives and staff have had closer contacts than they normally would, but there is a difference in opinion to whether this is a positive thing or not. Mats', Malin's and Peter's relatives have experienced the closer contact with the staff as a positive thing. Some are of the opinion that it has been positive to get to know the staff better. However, the staff has been more uncertain to whether this i good or not. The staff at one of the group homes point to the aspect of "grown-up existence". They feel that it is abnormal to have such frequent contacts between home and work and that this to a high extent is a matter of being treated as a grown-up. It does not necessarily mean that frequent contacts create a closer one, in other words that there is an increase in quality. However, one can presume, that frequent contacts create a better understanding towards the other party. Consequently, this opinion is supported by the parents comments.

One can visualize that the continuity in the relations between home and work were strengthend during the project. (in Malin's and Mats' case for example). Above all an increase in the frequency of the contacts is apparent. However, the use of the still picture telephone has not resulted in increasing contacts with people outside of the "inner" circle. Nevertheless, in Mats' case the still picture telephone has contributed to the possibility to communicate with his brother, common law wife and their small son. For many people with mental retardation the social network is very limited. This has been shown in other studies, Brodin (1992), Brodin and Björck-Åkesson (1991) and Brodin and Larsson (1986).

Organization/system

Between staff working at group homes and day centers there is a prominent difference in opinion on people with mental retardation and their everyday lives. One possible explanation to the different opinions of the mentally retarded adult lies in the nature of the different activities taking place at the group homes and day centers. A group home is the mentally retarded persons home and it is fully understandable that the staff there have other goals than the staff at the day center. The staff at the group home primarily work with care and domestic duties, while the work at the day center involves activities more work orientated. It does not always go without saying that the staff at the group home feel they should train different abilities, which is shown in other studies (Brodin & Larsson, 1989).

One could summarize this by saying that the staff at the group home are not used to goal orientated work when it concerns functional impairment.

This does not mean that the work they carry out in any way is less important. The staff at Malin's group home, were of a different opinion to the need of the still picture telephone than the parents and the staff at the day center. They could not see any need for a still picture telephone for Malin and by this meant that she managed to call without it. They were not convinced of the motive that the still picture telephone would increase Malin's possibilities to influence the calls and she by herself could choose the pictures to be transmitted.

The staff's attitude to the work in which they are going to participate is of importance. This concerns the staff at the group home as well as at the day center. It is crucial that there is enough time planned to carry out the work with the project och also how the priority is given to the project work in comparison to other activities at the day center. The lack of time is apparent from the interviews and diary notes on Malin, Mats and Peter. Even if the staff at the beginning is enthusiastic, other activities come in between and therefore they need support and possibilities to include the application in the daily activities during the project.

Other aspects affecting the telephoning have been the staffs' education, courses and sick leaves. In some cases there has been a high rate of changing of staff which has resulted in difficulties to keep the continuity for the project activities. Certain aspects have been significant for the still picture telephony for people with profound mental retardation and those aspects can be said to correspond to earlier experiences with still picture telephony for moderately mentally retarded people (Brodin & Björck-Åkesson, 1991).

Important aspects on still picture telephony are:

- that the participants in the project receive more individual attention
- that a mutual activity results in more subject to talk about
- that relatives and staff get more frequent and in some cases closer contacts
- that the attitude of the staff is of great importance for the result
- that the staff situation is very important

Several ethical considerations were made at the start of the project. One of the most important one can be said to be that the persons showing a need for the still picture telephone should be able to keep the equipment without cost after the project finished. The main reason for this was the problem that follows the mental retardation itself, namely to be able to understand that one is only able to keep the equipment long enough to try if it works. Out of the four persons participating in the project Elsa and Malin have been able to keep the equipment. The two other persons who returned the

still picture telephone have by parents and staff been regarded as not in need of them. Consequently none of them have been missing the still picture telephone.

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APPENDIX 1

STILL PICTURE TELEPHONES FOR PERSONS WITH PROFOUND MENTAL RETARDATION

BACKGROUND DESCRIPTION

Person.....Sex .....Age .....

Housing conditions

Earlier (for persons living in an institutions, please indicate approximate size)

.....
.....
.....
.....
.....
.....
.....
Present.....
.....
.....
.....

Schooling

Class for mentally reetarded children	Number of years.....
Class for severely mentally retarded children	Number of years.....
Other	Number of years.....
None	.....
Schooling finished	Year.....

Main occupation at day activity center

.....
.....
.....

Social contact network

Has contact with: (Tick relevant alternative)

	Daily	Every week	Sporadically
Mother			
Father			
Siblings			
1.			
2.			
3.			
4.			
Relatives			
1.			
2.			
3.			
4.			
5.			
Friends (or staff during leisure time)			
1.			
2.			
3.			
4.			
5.			
Contact person			

Spare time interests

.....

.....

Degree of mental retardation

.....

Assessed by

.....

Basis for diagnosis (if possible, please indicate which tests have been used and when the assessment has been made)

.....

.....

Additional functional disorder(Please tick)

Sight	____YES____NO
Type of visual impairment.....	
Glasses have been prescribed	____YES____NO
Uses glasses daily	____YES____NO
Needs enlarged text	____YES____NO
Hearing	____YES____NO
Type of hearing impairment	
Hearing aid has been prescribed	____YES____NO
Uses hearing aid	____YES____NO
Motor impairment	____YES____NO
Type of motor impairment	
Uses mobility aid	____YES____NO
Type(s).....	
Epilepsy	____YES____NO
Medication	____YES____NO
Speech impairment	____YES____NO
Medical disorders	____YES____NO

Type.....

Other.....

.....

.....

Gross motor impairment _____YES_____NO

Type.....

.....

Kommentar .....

Fine motor impairment _____YES_____NO

Type..... .....

.....

Comment.....

Pictures

Recognizes objects on pictures _____YES _____NO

Recognizes persons on pictures _____YES _____NO

Recognizes symbols (Bliss, Pictogram) _____YES _____NO

Recognizes digits, letters _____YES _____NO

Uses pictures/symbols for communication _____YES _____NO

Uses pictures to mark his/her environment _____YES _____NO

Communication/language

Is motivated to communication _____YES _____NO

Communicates by means of speech _____YES _____NO

Communicates by means of signs _____YES _____NO

Communicates by menas of pictures/ symbols _____YES_____NO

Principal way of communications (please also indicate combinations)

.....

.....

Use of communication aids _____YES _____NO

Type:.....

.....

Initiates communication:

_____always_____often_____sometimes _____ seldom_____ never

Responds to communication:

_____always_____often_____sometimes _____ seldom_____ never

Telephoning before the start of the project

Uses the telephone:

_____daily_____sometimes _____ seldom_____ never

Calls the following persons:

.....

.....

.....

.....

Recognizes telephone voices of
persons close to him/her _____YES _____NO

Recognizes different telephone signals _____YES _____NO

Can make a call by him/her self _____YES _____NO

Can answer the telephone on his/her own _____YES _____NO

Please discribe the normal procedure for telephoning:

.....

.....

.....

.....

.....

.....

Please describe an ordinary weekday in the participant's life (normal routines, occupation, contacts etc.)

.....

.....

.....

.....

.....

Thank you for your cooperation. Please send the completed form to:

Jane Brodin
Department of Education
Stockholm University
S-106 91 STOCKHOLM

JB/EBÅ 9111 **APPENDIX 2**

STILL PICTURE TELEPHONES FOR PERSONS WITH PROFOUND MENTAL RETARDATION

PROTOCOL FOR TELEPHONE USE

Station __ Incoming __ Outgoing ___ Filled in by_____

Date

Call duration

X talked to

Initiator

Conversation subjects

How does X react during the call?

Does X look at pictures?
Does X recognize the conversation partner on the picture?

(Please tick the appropriate alternative)

Looks happy
Strains the body/becomes active
Looks scared/worried
Shows interest
Does not show interest
Gets angry/upset
Does not react
Other

Which pictures were sent over the tele network?

APPENDIX 3

STILL PICTURE TELEPHONES FOR PERSONS WITH PROFOUND MENTAL RETARDATION

DIARY NOTES

Station..... Date..... Filles in by.....

Please describe X attitude to telephoning during the last two weeks. Desribe possible changes in the behaviour.

APPENDIX 4

STILL PICTURE TELEPHONES FOR PERSONS WITH PROFOUND MENTAL RETARDATION

The project "Still picture telephones for persons with profound mental retardation" is a project which aim is to evaluate the use of still picture telephones for adults with mental retardation. The project takes place at the Department of Education at Stockholm University, and is carried out by Jane Brodin and Eva Björck-Åkesson. The project is financed by Swedish Telecom and can be considered as a continuation of an earlier study on still picture telephones for persons with moderate mental retardation. Four adults with profound mental retardation are included in the project. Two of the participants live in Jönköping and two in the Stockholm area.

Each parent/guardian or day center have completed a questionnaire with background information, which is the basis of a description of each person included in the project. The material is decoded and no information will be included that will make it possible for persons not directly concerned to identify the participants. The day centers included will, however, be mentioned, as staff from other day centers could benefit by knowing about the project. We intend to make video recordings with some of the participants at the start of the project as well as after a couple of months training. This material will not, without specific permission from parents/ contact person/staff, be shown, but will be used for analyses.

The aim of the project is to investigate to what extent people with profound mental retardation could benefit from still picture telephones and to elucidate if the picture telephones can contribute to an increased desire and motivation to communicate and the independence of the persons included in the project.

Jane Brodin
Stockholm University
Department of Education
S-106 91 STOCKHOLM

Eva Björck-Åkesson
University College of Jönköping
P.O. Box 1026
S-551 11 JÖNKÖPING

APPENDIX 5

PROJECT INFORMATION - STILL PICTURE TELEPHONY

Participants are below referred to as X.

X should make at least 3 telephone calls per week during the trial period which lasts from 1st of December 1991 till 1st of August 1992. Each call should be recorded on the enclosed **telephoning protocol** by the person who is together with the mentally retarded person. Every two weeks we would like to receive a weekly report. The cost to make calls with the still picture telephone is not higher than for an ordinary telephone call. If you claim a repayment for the extra telephone costs, we would be grateful if you could make a note of the number of calls made and possibly an account for the extra costs.

It is important that you make a note of how you go about it when telephoning and what instructions you give to X. This is to enable us to make use of your ideas for other persons who will later use the still picture telephone as an aid. **The diary notes** aim to give a clear picture of how the training and telephoning developes. Here you should describe special events in connection with the use of the still picture telephone. The diary notes should be made continuously and they should summarize each week's experiences of training and telephoning. Any practical problems should be described in the diary notes. Such problems could be that the participant for some reason has been unable to use the telephone, e.g. due to illness or absence for another reason. Please, also describe the first time X made a telephone call with your assistance. How he/she reacted can be described by you quoting what is said and what pictures have been transmitted over the tele net.

- How does X react to his own picture on the screen? Changes?
- How does X react to the picture of the receiver? Changes?

Please tell us about events and episodes taking place in connection with telephoning!

We will visit you for an interview and to get an idea of how the telephoning is proceeding and to make sure that everyting is functioning. The easiest way of reaching any of us is by telefax.

Jane Brodin
Pnone 08-16 31 47
Fax 08-612 70 61

Eva Björck-Åkesson
Phone 036-15 77 97
Fax 036-12 22 51

APPENDIX 6

QUESTIONS AT CONCLUDING INTERVIEW

THE EQUIPMENT

1. What technical adaptations have been make on the equipment?
   Have different types of extra equipment been used such as:
   Loudspeaking telephone..... Giant button.....
2. How have the adaptations/additional equipment been used?
3. How has the picture telephone been functioning during the project?
4. What changes on the still picture telephone would you like?

PLACING

5. Where has the picture telephone been placed?
   Has it been moved to different places during the project?
   Has other activities been going on simultaneously in the room?
6. Has the still picture telephone been used by more than one mentally retarded person?
7. Has other mentally retarded persons apart from the users been interested?

ATTITUDES

8. What attitude have the people responsible had to the still picture telephone at work/home?
9. How has this attitude been noticed/appeared?

INFLUENCE

10. How has the picture telephone affected the participants daily life?
11. How has the picture telephone affected other tasks?

CHANGES

12. Describe changes in the participants, which can be associated to the use of the still picture telephone.
13. Are you of the opinion that the participant have benefited from the still picture telephone?
14. Indicate what has been positive with the telephoning.
15. Indicate what has been negative with the telephoning.

COMMUNICATION

16. Has the use of the still picture telephone affected the participant's contacts with others?
17. Has the use of the still picture telephone affected the participant's ability to communicate? Please indicate in what way.

FUTURE USE

18. Describe your expectations for the future regarding the use of still picture telephones.
    Will the participants use the the still picture telephone continuously?
    Is there a real demant for the still picture telephone?

The main task of the Swedish Telecom Group is to develop, market and promote communication solutions to all people in Sweden.

In connection with research and development work within the field of telecommunications, the interests of people with disabilities should be heeded. Swedish Telecom co-operates with the Swedish Handicap Institute and Swedish disability organizations in these areas.

Telematics and Disability Centre

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